

Chapter VI **NATURAL FEATURES**

INTRODUCTION

The natural landscape of Deering is comprised of forested lands, prominent hills and mountains such as Hedgehog Hill and Clark Summit, has an abundance of water resources such as the Contoocook and Piscataquog Rivers, and features nearly 3,400 acres of conservation land. Over 14,800 acres in Town is under current use. Numerous passive agricultural fields or crop fields are located throughout the Town. Wildlife is abundant in Deering, with active bear, wood duck, and loon populations.

The 1991 Master Plan had a Natural Features Chapter which discussed topography, aquifers, hydric soils, and wetlands. Basic data was documented and a future land use pattern for Deering was recommended. Maintaining the rural character of the Town was the goal of the Chapter. Areas which would be appropriate to conserve from development were identified and mapped on the Land Use Map of 1991. A Water Resources Management and Protection Plan adopted in 1990 thoroughly documented the condition of watersheds, geology, and groundwater resources in Deering.

In 2004, retention of rural character is still the overriding goal of the Master Plan and the Natural Features Chapter. The Community Survey results from November 2002 heavily indicate that preservation of open space is a high priority; 63% of responses were "Very Important" while "Important" responses were an additional 26%. Additionally, nearly 80% of respondents felt supported acquiring land for conservation purposes. Similar results were found at the Community Visioning Session held in July 2003. Participants felt that it was essential to balance growth with rural character, to protect open spaces, to protect the aquifer and groundwater, and to refine and increase regulations for new development.

With these guiding principles, the Natural Features Chapter of the 2004 Master Plan undertook a comprehensive examination of all the facets of natural features in Deering. Data was documented for various types of water resources, geologic resources, land resources, and ecological resources. A set of six maps depicting the natural feature findings in Deering are included. Lastly, a list of Objectives and Recommendations were formulated which will guide the Town toward maintaining the rural character it desires.

OBJECTIVES OF THE CHAPTER AND RECOMMENDATIONS

- To preserve the rural character of the Town by protecting scenic vistas and open spaces including limiting or mitigating lights, noise, and odor emission.
 - Pass municipal (Board of Selectmen and Planning Board) and zoning ordinances to regulate light and noise pollution.
 - Coordinate regularly with the NH DES Air Resources Division to combat air pollution.
 - Educate landowners about backyard burning laws.
 - Include provisions for the retention of scenic vistas in the Subdivision Regulations.
 - Continue to contact landowners about the benefits of open space and conservation easements.
- To educate the citizens of the Town of Deering that land is the community, not a commodity.
 - Establish a Town Forest for the residents of Deering.
 - Educate landowners on the merits of sustainable, active forests and current use status.
 - Raise awareness of exotic species and preventative measures.
 - Produce a *Costs of Community Services Study* to gauge the costs of development versus open space.

- Continue the semi-annual Roadside Clean-Up Program.
 - Hold educational workshops on topics including the natural resources in Town, habitats, forest management, exotic species, etc.
- To protect valuable resources including water, agricultural, forestry, and geologic resources.
- Utilize the skills of college students to perform a wetlands assessment to designate “prime” wetland systems.
 - Increase the land use change tax to 100% to be directed to the Conservation Fund.
 - Develop a current listing of tree farms/managed forests by using current use forms and forest management plans as a starting point.
 - Enact native landscaping regulations for housing development subdivisions and site plans.
 - Establish a minimum setback from roads to prohibit the placement of wells along roadways.
 - Continue monitoring the surface water in Deering.
 - Install and evaluate monitoring wells at appropriate locations (away from roadways, etc) to monitor water quality.

- Enact a water testing requirement for arsenic, radon, nitrate, chloride, sodium, MtBe, and septic waste before a certificate of occupancy is issued for all new residences and businesses.
 - Review and adopt as appropriate existing state and federal regulations and best management practice guidelines for proper water quality management practices of enterprises (for example, hairdressers, agriculture, livestock, junkyards).
 - Encourage landowners to place their agricultural lands and fields under conservation.
 - Develop ordinances that reduce the ability to develop on a steep slope and protect scenic vistas on the Town's hills and mountains.
 - Encourage diverse representation on the Conservation Commission, such as recruitment of hunting and fishing enthusiasts.
- To preserve valuable wildlife habitat in the Town.
- Inventory the threatened and endangered wildlife and plant species and their habitats of the Town.
 - Require a wildlife management assessment inventory for major subdivisions.
 - Conduct a vernal pool inventory.
 - Continue annual monitoring of the wood duck population.
 - Coordinate with the NH Fish and Game to tap into their local knowledge about wildlife and preservation.

- To preserve and enhance natural recreational resources.
 - Obtain public access to the Contoocook River.
 - Coordinate a meeting of the owners of conservation easements to develop a plan for public use of the lands.
 - Promote knowledge of trails and encourage responsible use of the Class VI road hiking trails in Town.

- To educate and instill the value of the natural environment in the youth of the Town.
 - Continue sending young adults to summer camp.
 - Encourage the monitoring of potential exotic species by Boy Scouts or students fulfilling community service requirements.
 - Recruit elementary, middle, and high school students to work on projects with the Conservation Commission (for example, exotic weed watch, wood duck program, roadside clean up, surface water monitoring).
 - Communicate with the School Board to solicit Deering students to perform their community service requirements in Deering.

COMMUNITY SURVEY RESULTS

The November 2002 Community Survey yielded favorable results supporting the preservation of natural resources. Over 88% of respondents felt that preserving open space was a “very important” or “important” objective. Seventy-eight percent (78%) supported the acquisition of lands to meet this purpose.

Table VI-1

Please indicate how important the preservation of open space in Deering is to you:

	Total	Percent
Very Important	237	63.0%
Important	96	25.5%
Somewhat Important	26	6.9%
Not Important	11	2.9%
No Opinion	6	1.6%
Grand Total	376	100.0%

Grand Total	1169	100.0%
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Table VI-2

Do you support the acquisition of lands for conservation purposes?

	Total	Percent
Yes	292	78.1%
No	42	11.2%
No Opinion	40	10.7%
Grand Total	374	100.0%

Table VI-3

What are the most important land conservation objectives to you?
Please choose the three most important:

	Total	Percent
Fields/Agriculture	145	12.4%
Fish/Wildlife management	138	11.8%
Recreation	58	5.0%
Aquifers	103	8.8%
Rivers/Streams	162	13.9%
Forests	215	18.4%
Scenic Views	116	9.9%
Non-game	12	1.0%
Wetlands	101	8.6%
Ponds	109	9.3%
Other	10	0.9%

Table VI-4

Would you support a warrant article for appropriating money for land conservation?

	Total	Percent
Yes	209	57.6%
No	77	21.2%
No Opinion	77	21.2%
Grand Total	363	100.0%

This Chapter was partly designed and written in consideration of these community survey results .

INVENTORY OF NATURAL RESOURCES

In order to establish the need for preservation, it is necessary to inventory the resources that define Deering's character. The majority of this information was taken directly from the *1999 CNHRPC Natural, Cultural, and Historical Resources Inventory* that the Deering Conservation Commission supplied information for and from mapped sources. A series of maps was developed which depict these resources of the Town.

Water Resources

The *Water Resources Map* details the water resources as noted here in this section. The comprehensive map includes the hydrographic features, aquifer transmissivity (how much water flows), wetlands, watershed, public water supplies and well locations.

Water Supplies

Deering residents are served by private wells drawing water from the bedrock and stratified drift aquifer. The NH Department of Environmental Services have tracked the locations and number of well permits issued since 1984. Since that time, the greatest number of wells have been situated on homes along East Deering Road (29 wells), Route 149 (23 wells), and Old County Road (16). A total of 228 new or replacement wells have been installed in Town between 1984 and 2002.

Table VI-5
New Residential Wells Installed 1984 - 2002,
By Road Occurrence (> 5 wells)

Road Name	# of Wells 1984- 2002
2nd NH Tpke	10
Bennington Depot Road	5
Clement Hill Road	11
Dickey Hill Road	9
Driscoll Road	9
East Deering Road	29
Fisher Road	9

Longwoods Road	7
Old County Road	16
Reservoir Road	15
Route 149	23
Tubbs Hill Road	12
Wolf Hill Road	5
Zoski Road	8

Sources: NH DES Well Inventory, 2003

Seven public water supplies are located in Deering. The total population served by public water supplies, after accounting for duplicate wells at one site, is 482 residents. Table VI-6 displays the locations and populations served by public water supplies in Town:

Table VI-6
Registered Public Water Supplies

Name	Road	Site Location	Population Served
Longwood's Mobile Home Park	Longwood Rd	in PS	245
Longwood's Mobile Home Park	Longwood Rd	200' east of PS	245
His Mansion /Dining Hall	Wolf Hill Rd	20' behind dining hall	105
His Mansion /Dining Hall	Wolf Hill Rd	60' behind office	105
His Mansion / New Beginnings	Wolf Hill Rd	25' behind rachel	62
Johnson City Mobile Home Park	Holton Crossing Rd	in pump house	45
Cliffon's Country Camping	2nd NH Tpke	100' N from back of home	25

Source: NH DES Public Water Supplies GIS Layer supplied to NH GRANIT, 1998

Lakes

Created in 1884 by impounding the Piscataquog River, the Deering Reservoir is the largest water body in Deering. This lake is located in central Deering and is 314 acres in area with 8,800 meters of shoreline and a maximum sounded depth of 10.7 meters and a mean depth of approximately 4 meters. Lyman-Tunbridge Rock Outcrop Complex and Marlow Stony Loam are the dominant soil types surrounding the lake and date back to the glacial period. The Reservoir is used exclusively for recreational use such as boating, swimming, and fishing. Seasonal homes and cottages around the reservoir serve as homes to many Deering residents.

Permanent Ponds

Black Fox Pond is located in north-central Deering and is about 36 acres in size.

Dudley Pond is located in northeast Deering. This pond is 30 acres in area and has 1,400 meters of shoreline and a maximum sounded depth of 6.1 meters and a mean depth of 3.6 meters. New Hampshire Fish & Game currently own and control a 13-foot dam on Dudley Pond. There are motorboat restrictions

for Dudley Pond and, the shoreline of is relatively undeveloped with only one camp. This pond is located in a relatively remote area of Deering and is used mostly for its scenic observation.

Lily Pond is located in the southeast, and has a surface area of about 15 acres. This pond is a natural water body.

Clifton's Camp Pond is located in the west, and has a surface area of about 8 acres. This is a dammed pond.

Mud Pond is located in the northeast, and has a surface area of about 8 acres. This is a natural pond.

Fulton Pond is located in south-central Deering, and has a surface area of about 6 acres. The pond is a natural pond fed by springs and runoff.

Oxbow Campground Pond is located in the north, and has a surface area of about 5 acres. This is a dammed pond.

Frog Pond is located in the northwest and is about 1 acre in size.

An unnamed pond is located on the Piscataquog River just south of Route 149 (Wasserman's). It is a natural dam phenomenon, a few acres in size.

Beaver Ponds

Due to the dynamic nature of these water bodies, this listing represents estimated observed areas from 11/11/98 and have been given local names.

Hunter's Pond is located in the southeast, and is about 25 acres in size.

Central Rangeway Pond is located in central Deering, and is about 20 acres in size.

Johnson's Pond is located in the northeast, and is about 20 acres in size.

Rivers

The Piscataquog River consists of three branches, the South, Middle, and North, totaling approximately 65 miles in length. The North branch originates at the southern tip of the Deering Reservoir in south central Deering. It travels south a short distance and then flows in a northeasterly direction for about 5 miles, eventually exiting Deering and entering Weare. Numerous recreational opportunities, whether it be hiking, boating, or fishing, are available on the Piscataquog. The Piscataquog River Local Advisory Commission is in the final stages of presenting a management plan to the seven towns comprising the river corridor. The Piscataquog River is part of the NH Rivers Management and Protection Program.

Flowing in a northwesterly direction, the Contoocook River marks Deering's western border between Deering and Antrim and is the largest River in the immediate area. The areas surrounding it are mostly rural, making it a well preserved strip of land. In fact, 1,093 acres of floodplain, 1,040 acres of poorly or very poorly drained soils and the Town's most productive stratified drift aquifer surround the Contoocook River as it meanders through Deering. The Contoocook is also part of the NH Rivers Management and Protection Program.

Brooks

The Smith Brook, 12,200 feet in length, is located in the northeast corner of the Town. Flowing in a northeasterly direction for about 600 feet, the brook is impounded to form a 36 acre pond within the Deering Wildlife Sanctuary. The Sanctuary is owned and operated by the Audubon Society of New Hampshire.

Patten Brook enters into Deering's northeast corner from Henniker near Dudley Pond. The brook flows in a south-southeasterly direction for 6,000 feet at which point it joins Dudley Brook. There are no ponds or impoundments within this watershed.

Dudley Brook originates at the base of Dudley Pond and flows in a southeasterly direction for about 17,900 feet. This Class "A" brook receives the waters of Patten and Smith Brooks and empties into the Piscataquog River. Several old dams and large wetland areas are associated with the Dudley Brook Watershed.

Water Testing

Deering maintains a regular program for testing its surface waters for conductivity and PH. Additional baseline trophic condition data was collected for Deering Reservoir and Dudley Pond in 1980 and 1987, respectively.

Stream Testing Data

Stream testing has been underway for a number of years. The data below (baseline sites) separates the low salt sites from the rest (all sites) to give a clearer picture of what level of conductivity (a measure of contamination) is to be expected from natural sources.

Table VI-7

Average of Spring and Fall Surface Water Testing Sites in Streams, 1993-1999

	Conductivity*	PH	Water Temp
Spring All Sites	63 u/mhos	6.6	66 F
Spring All Sites (low salt)	43 u/mhos		
Fall All Sites	62 u.mhos	6.6	55 F
Fall All Sites (low salt)	43 u/mhos		

*Source:*** all conductivity values are in u/mhos per cm.*

Table VI-8

Stream Testing Results, 1993-1999

Year	Average of all Sites for Fall Testing				Average of all Sites for Spring Testing			
	# of Locations	Conduc tivity*	PH	Water Temp	# of Locations	Conduc tivity*	PH	Water Temp
1999	30	66	6.0	61	29	68	6.9	73
1998	29	58	6.9	54	29	66	6.0	61
1997	31	62	6.6	54	32	63	6.6	59
1996	31	66	6.9	54	32	48	6.8	67
1995	25	58	6.2	60	29	64	6.5	70
1994	27	63	6.7	60	28	64	6.7	70
1993	22	62	6.7	44	27	60	6.7	62

*Source:***all conductivity values are in u/mhos per cm.*

Table VI-9
Baseline Stream Sites Results, 1993-1999

Baseline Sites (low salt Fall)			Baseline Sites (low salt Spring)	
Year	# of Locations	Conductivity *	# of Locations	Conductivity *
1999	25	35	25	50
1998	27	40	27	35
1997	27	39	27	41
1996	26	46	27	33
1995	23	46	26	46
1994	24	43	23	50
1993	19	51	24	43

Source:

**all conductivity values are in u/mhos per cm.*

Surface Water Testing Data

These following tests were conducted for both Deering Reservoir and Dudley Pond over a course of a number of years. Tables VI-10 and VI-11 on the following pages illustrate the summarized data.

Acid Neutral Capacity (ANC) – The ANC describes the ability of a solution to resist changes in pH by neutralizing the acidic input to the lake. The higher the ANC, the greater the ability of the water to neutralize acids. The ANC of the epilimnion (upper layer) of the lake continues to remain slightly less than the state mean of 6.7 mg/l. Specifically this means that the lake is moderately vulnerable to acidic inputs.

Conductivity – Conductivity is the numerical expression of the ability of water to carry an electrical current. Primarily the number of ionic particles present determines it. The soft waters of New Hampshire have traditionally had low conductivity values. High conductivity may indicate pollution from such sources as road salting, faulty septic systems, urban/agricultural runoff, or development. As a general rule of thumb, conductivity levels in excess of 100 umhos/cm indicate man-made sources of ions. The conductivity should

remain fairly constant for a given lake throughout the year. Any major changes over a short period of time may indicate erosion resulting from heavy rain or a large flush of runoff from a problem site.

The conductivity has increased in the lake inlets since monitoring began in 1987. Of particular concern are the Morotta and Main inlets. New developments, forestry activities, septic systems, and road salting in the watersheds of the reservoir feeder streams need to be carefully monitored and evaluated to prevent negative impacts to the water quality of the lake.

Phosphorus and Dissolved Oxygen – Over the years, the lake has noted oxygen deficient conditions in the hypomilnion (lower layer) of the lake. The lake has displayed lower dissolved oxygen concentrations and a higher total phosphorus concentration in the hypomilnion then in the epilimnion (the upper layer). This suggests that the process of internal total phosphorus loading is occurring in the lake. When oxygen levels are depleted to less than 1 mg/l in the hypomilnion, the phosphorus that is normally bound up in the sediment may be released into the water column. This makes the lake extremely susceptible to external nutrients that may be added to the lake by septic systems, lawn care, street runoff, or development in the watershed of the lake feeder streams.

The water quality testing at Deering Lake has been completed at numerous sampling points on a biannual basis for sixteen years. The overall results of the water quality testing have indicated that the lake is in generally good health but is highly sensitive in several areas. The chlorophyll-a, transparency, phosphorus, and pH have remained relatively stable over the years. The water quality parameters that have displayed significant change or are indicative of sensitive conditions are as follows.

Table VI-10
Water Quality Data of Deering Reservoir

Date	Chlorophyll -a mg/m ³	Transpar -ency meters	Phosphor us (E) ug/l	Turbidit y (E) NTU's	pH (E)	Conductivit y (E) umhos/cm	ACN Mg/l
1987	2.59	6.1	9	NT	6.89	53.5	4.80
1988	4.12	6.4	6	NT	6.83	58.7	5.80
1989	8.92	5.0	7	NT	6.87	66.1	4.57
1990	1.93	6.0	8	NT	6.87	64.4	4.60
1991	2.15	6.2	3	NT	6.89	61.6	5.93
1992	2.63	4.9	6	NT	6.95	64.9	5.77
1993	1.70	6.2	8	NT	6.75	67.2	5.77
1994	2.73	6.8	10	NT	6.75	73.1	4.57
1995	1.91	6.7	7	NT	6.72	71.5	5.13
1996	1.82	6.9	9	NT	6.60	64.0	4.73
1997	2.22	6.1	8	0.2	6.74	61.0	4.93
1998	4.44	5.9	5	0.4	6.78	61.1	5.0
1999	2.99	5.1	7	0.4	6.72	70.0	4.83

2000	2.23	5.4	6	0.3	6.69	72.0	5.10
2001	3.45	5.4	6	0.3	6.93	75.9	5.77
2002	3.21	6	7	0.7	6.61	82.9	5.23
State Values	7.02	3.7	1-10	1.0	6.5	62.1	6.7
Range Values	good	good/exc- optional	good	good	satisfac- tory	>50 human impact	highly sensi- tive

Source: NH Fish and Game Region 4

NT = Not Tested; (E) = Epilimnion (upper layer); ACM = Acid Neutralizing Capacity; All measurements are means

Dudley Pond was monitored for water quality in 1994, 1995, and 1996 and is currently scheduled for additional water quality testing in the year 2004. Dudley Pond is largely undeveloped with only one access road and one small camp structure.

Of particular interest at this pond were the phosphorus concentrations. Internal loading of phosphorus from the bottom sediments was evident at this pond in late summer, resulting in an oxygen deficiency near the bottom of the pond. Oxygen depletion is a natural result of decomposition of organic matter and is hard to abate. This condition would, however, make the pond more sensitive to external nutrients, should watershed development occur.

Table VI-11
Water Quality Data of Dudley Reservoir

Date	Chlorophyll -a mg/m ³	Transpar- -ency meters	Phosphor us (E) ug/l	Turbidit y (E) NTU's	pH (E)	Conductivit y (E) umhos/cm	ACN mg/l
1994	3.16	5.3	11	19	6.79	5.07	33.9
1995	9.79	4.2	10	27	6.91	5.27	33.2
1996	2.53	4.8	8	22	6.38	5.35	32.3

Source: NH Fish and Game Region 4

Hydric Soils

According to the Hillsborough County Soils Survey conducted in the 1980s, out of the total land acreage of Deering (20,288), nearly 12% is comprised of hydric

soils. There are approximately 2,469 acres of very poor or poorly drained soils, 12.2% of the total area of the Town.

Very Poorly Drained Soils (Hydric A) – Water is removed so slowly that the water table remains at or on the ground surface for the greater part of the surface for the greater part of the time (9–10 months of the year). Very poorly drained soils occupy level or depressed sites, are frequently ponded, commonly have a thick, dark colored surface layer, and have gray subsoil. In Deering, there are nearly 1,100 acres of very poorly drained soils comprising of muck, peat, and ponded borohemists.

Poorly Drained Soils (Hydric B) – Water moves so slowly that the water table remains at or near the ground surface for a large part of the time (6–9 months of the year). These soils occupy nearly level to sloping sites, are ponded for short periods in some places, have a dark colored surface layer, and have grayish colored subsoil which is mottled in most places. In Deering, different types of loams comprise the poorly drained soils.

Table VI-12
Hydric Soil Acreages by Type in Deering

Soils Type	Hydric	Acreage
15 – Searsport Muck	A	222.8
197 – Borohemists, Ponded	A	438.7
295 – Greenwood Mucky Peat	A	250.8
395 – Chocorua Mucky Peat	A	92.9
549 – Peacham Stony Muck	A	68
Subtotal		1,073.2
105 – Rumney Loam	B	199.5
214A – Naumbury Fine Sandy Loam, 0-3%	B	569.7
247B – Lyme Stony Loam, 0-5%	B	441.8
647B – Pillsbury Stony Loam, 0-5%	B	184.8
Subtotal		1,395.8
Total Acreage of Hydric Soils		2,469

Sources: Natural Resource Conservation Service

As depicted on the ***Water Resources Map***, hydric soils in Deering are found throughout the Town. High concentrations are located around Long Woods Road, over the main aquifer; in North Deering between Clement Hill Road, North Road, and Quaker Street; and between East Deering Road and Deering Center Road. Most rivers and streams in Town, including the Contoocook and Piscataquog Rivers, Dudley Brook, and the variety of small ponds are bounded by wetlands.

Watersheds

A watershed includes all the land that drains into a given body of water. There are multiple streams that run into rivers and ultimately into the ocean. The waterbody and the land surrounding it comprise a watershed. Deering has two major watersheds, the Contoocook River Watershed and the Piscataquog River Watershed. Within these two major areas, multiple secondary watersheds sustain and enrich the habitat and provide critical resources to sustain wildlife.

Contoocook River

The Contoocook River flows from the Town of Jaffrey until it joins the Merrimack River in Penacook, New Hampshire. It has a total drainage area of 490,240 acres , 8,762 of which are in the Town of Deering. In Deering, the River flows through a broad, flat valley.

- Unnamed Brook

The total watershed is 886 acres, 184 of which are within Deering. The 1000 feet of the brook that is within Deering has no ponds or impoundments.

- Gerini Brook

The majority, 2,125 acres, of this 2,493 acre watershed are within Deering. Gerini Brook has one impounded man-made pond, Clifton's Country Campground Pond.

- Cork Plain

This watershed is solely within the Town of Deering. It consists of 726 acres with two small intermittent brooks which flow into the Contoocook River. There are several dug farm ponds in this area.

- Manselville Brook

This watershed contains 3,347 acres, all of which are within Deering. Manselville Brook runs for 13,500 feet and then flows into the Contoocook River. There are two perennial streams in this watershed that feed into the Manselville Brook.

- Peasley Brook

Less than half, 537 acres, of the 1,310 acre watershed lie within Deering. The Peasley Brook originates from a small pond in Hillsboro and does not have any ponds or impoundments in the section of the brook that is within Deering.

Piscataquog River

There are three branches to the Piscataquog River, the Piscataquog River branch, the South Branch, and the Middle Branch. The Piscataquog River originates from the Deering Reservoir, while the other two branches originate from two different areas in Frankestown. The entire watershed is about 136,960 acres, 25,163 acres of which are within Deering. Water bodies within Deering empty into both the Piscataquog River and the South Branch of the Piscataquog.

- Deering Reservoir

All 2,864 acres of this watershed are within Deering. There are two tributaries that empty into the Reservoir. None of the streams within the Deering Reservoir are impounded.

- Smith Brook

The majority of the acres, 2,390, are the 2,601 acre watershed are within Deering. Smith Brook, 12,200 feet in length, is impounded to form a pond within the Deering Wildlife Sanctuary. Smith Brook eventually merges with Mud Pond Tributary which originates from the wetland area. The tributary enters Mud Pond, a 6 acre natural pond. The tributary then exits Mud Pond and confluences with Smith Brook, which then merges with Patten Brook.

- Patten Brook

The Patten Brook Watershed consists of 689 acres, 202 acres of which are within Deering. Patten Brook flows for about 6,000 feet where it merges with Dudley Brook. There are no ponds or impounds in this watershed.

- Dudley Pond

Only 202 acres of the 644-acre watershed lie within Deering. A stream, originating from Pleasant Pond, flows within the watershed.

- Pleasant Pond

Sixty-four (64) acres of the 845 acre watershed are within Deering. There is a stream that flows into Pleasant Pond. Pleasant Pond is a natural pond managed by a warm water fishery by the New Hampshire Fish & Game Department.

- Dudley Brook

This watershed contains 2,408 acres, 2,200 of which are located within Deering. The brook originates from Dudley Pond and flows directly into the Piscataquog River. There are several old dams and wetlands in this watershed, although none of the dams impound water.

- Weare Reservoir

Less than 2% of the 3,308 acre watershed is within the Town of Deering. The Reservoir is also known as Horace Lake. One perennial stream, one tributary, and Dudley Brook empty into the Weare Reservoir.

- Dinsmore and Collins Brooks

Seven hundred twenty five (725) acres of this 5,045 acre watershed lie within Deering. Dinsmore Brook and Collins Brook are within this watershed. Shattuck Pond and Fulton Pond are also located within this Watershed.

- Upper Piscataquog River

This Watershed is defined in the 1990 Water Resources Management and Protection Plan as the section of the Piscataquog River from the dam at Deering Reservoir to its confluence with the Wear Reservoir. This area contains 5,091 acres, 3,958 of which fall within the Town of Deering. Wetlands and marsh areas are common in this watershed. There are no natural ponds or impoundments in this area of the Piscataquog River.

Aquifers

Stratified drifts are those areas where the material deposited from glacial meltwater streams is sorted or well graded. These areas of stratified soils, termed aquifers, are capable of storing large amounts of ground water. The largest stratified drift aquifer resides below the western edge of Deering along the Contoocook River. This aquifer runs the length of the Town from north to south. This aquifer is the potential water supply for West Deering. Other stratified drift deposits can be found in the east central part of the Town. Smaller aquifers exist in the northeast corner and in the southeast corner.

Wetlands

Wetlands are identified by the types of plants, the presence of wet soils, and by flooding that occurs in that region. Generally, wetlands consist of poorly drained and very poorly drained soils. Poorly drained soils are darker in color, have a 0%–8% slope, have a grayish colored subsoil, and have water table that stays at or near ground surface for 6 to 8 months of the year. Very poorly drained soils have a thick, dark colored surface layer, a gray subsoil, occupy level or depressed sites, and a water tables that remains at or near ground surface for 9 to 10 months annually. Wetlands inventoried, field-checked, and mapped by the US Fish and Wildlife Service between 1986 and 1990 dot the entire Town. Large wetland areas exist in the western portion of Deering along the Contoocook River. Several more may be found near Deering Reservoir and in the northeast and southeast corners of Town.

The different wetland types which are displayed on the ***Water Resources Map*** are palustrine, lacustrine, and riverine. Palustrine wetlands are freshwater forested wetlands which encompass the majority of all wetlands, including those in

Deering (over 1,500 acres). Lacustrine wetlands are produced by a lake and frequently are found along the boundaries of lakes and ponds (over 385 acres). The riverine wetlands are found along rivers and streams and along stream channels (only 11.2 acres in Deering).

Table VI-13
Wetland Acreages by Type

Type of Wetland	Acreage
Lacustrine	385.4
Palustrine	1,500.5
Riverine	11.2
Total	1,897.2

Sources: National Wetlands Inventory GIS database, 1986-1990

Dams

According to the NH Department of Environmental Services, there are 12 dams within Deering. The hazard classification system categorizes the dams on the basis of safety.

Three dams (3) in Deering are classified as AA, which means the failure of which would not threaten life or property, and three (3) are classified as A, which means a low hazard potential.

One (1) is classified as B (Deering Reservoir Dam), which means dams have a significant hazard potential were it to fail.

The most dangerous class, C, which means the dam has a high hazard potential with possible loss of life and damage to major highways. Deering has no class C dams.

The remaining five (5) dams are not classified, according to NH DES' records, because the dams are in ruins and do not currently hold back water.

Table VI-14
Dams in Deering

Hazard Class	Dam Name	River/Brook	Type	Status	Owner
--------------	----------	-------------	------	--------	-------

A	Dudley Pond Dam	Dudley Brook	Timber/Stone	Active	State
AA	Wildlife Pond Dam	Johnson Brook	Concrete	Active	Private
	Dudley Brook/Chase Dam	Dudley Brook	Stone/Earth	Ruins	Private
	Dudley Brook Lodge Dam	Dudley Brook	Stone/Earth	Ruins	Private
A	Black Fox Pond Dam	Smith Brook	Earth	Active	Private
	Dudley Brook Boulder Dam	Dudley Brook	Stone/Earth	Ruins	Private
	Chamberlain Fire Pond Dam	Natural Swale	Earth	Not Built	Private
AA	Wildlife Pond Dam	Natural Swale	Earth	Active	Private
AA	Branch Piscataquog River Dam	Piscataquog River	Concrete	Active	Private
B	Deering Reservoir Dam	Piscataquog River	Earth	Active	State
	Buchar Dam	TR Contoocook River	Timber/Stone	Not Built	Private
A	Kelley Recreation Pond Dam	Gerini Brook	Earth	Active	Private

Sources: NH Department of Environmental Services, 2003

Four of these dams are located along Dudley Brook, the highest concentration of dams in Town. Additional dams are situated at the Deering Reservoir and along other waterbodies. The Town should encourage regular maintenance and inspections of these dams in particular by the private owners of each dam.

Protection from Point Source Pollution

The Town of Deering has no public water supply or delivery system. Thus, all potable water comes from on site bedrock or overburden (dug) wells. There is also no municipal sewer system so all homes and businesses must be serviced by on site sanitary disposal systems. The most common method of heating structures in the Town is via heating systems fueled by No.2 heating oil, which is stored on site in either Aboveground Storage Tanks (AST's) or Underground Storage Tanks (UST's).

Based on the above information it becomes apparent that all homes and businesses in the Town use and rely on water resources. Proper management of businesses that use or generate waste products other than normal septic waste such as petroleum related compounds, gasoline, paint, dyes, bleaches, as well as other hazardous waste components must be monitored and carefully regulated to protect the underlying water resources. Point sources of groundwater and surface water pollution vary greatly. Contamination can result from specific point sources such as AST's, UST's, floor drains, dry wells, direct ground deposition, burying wastes, and septic systems.

One way to deal with potential point sources of contamination is via monitoring of surface and/or groundwater for potential impacts. The State of New Hampshire Department of Environmental Services (NHDES) requires that an Underground Injection Control (UIC) permit be obtained for anyone who is discharging anything other than normal household waste to an on site sanitary disposal system. The NHDES also regulates floor drains. Floor drains in areas where regulated contaminants are stored must discharge to a tight tank. Floor drains in such sensitive areas are not allowed to discharge to the on site septic system, dry well, or ground surface. Non-residential AST's and UST's may also be regulated dependent upon the size, contents, and use of the tanks.

The use of the existing regulatory base and expansion on this base to fit the community needs is a cost effective way to deal with some point sources of pollution.

Locations that are potentially hazardous to groundwater are mapped on the *Potential Threats to Water Resources Map*. The locations include junkyards, autobody shops, above ground storage tanks, and gravel pits.

Protection from Nonpoint Source Pollution

Another threat to Deering's waterways is nonpoint source (NPS) pollution, also known as polluted runoff. Nonpoint source pollution (NPS) is pollution that cannot be traced back to any specific source; it is the accumulated pollution resulting from everyday activities. Its effects are magnified by impervious surfaces, such as building roofs and paved surfaces. Water cannot infiltrate these surfaces, causing more water to run off over the land. As water washes over the land, it picks up oil, pesticides, nutrients, sediment, and other pollutants that have been placed into the environment by everyday activities. The runoff water flows into storm drains or directly into water bodies, carrying the pollutants that have been deposited. As little as 10% impervious surface on a lot can begin to negatively impact a waterway. Thus, the more intensively used a piece of land is, the more nearby waterways are negatively affected by polluted runoff.

Instigating protection from nonpoint source pollution is difficult in a rural, largely unbuilt town such as Deering. Limiting the amount of salt on roadways may be the most effective measure in reducing NPS.

Land Resources

The *Conservation and Public Lands and Scenic Vistas Map* depicts the conservation lands noted here in this section.

Conservation Lands

In this context, tracts of land under conservation can be permanently protected from future development under the parcel's deed or they can be under temporary conservation where no such permanent restrictions are placed upon the future use of the land. In Table VI-15, there are 22 parcels in Deering which have been permanently protected from development. Because of the Conservation Commission's very active conservation easement program, a number of additional private lands are under consideration and negotiation for easements.

Table VI-15
Conservation Lands

Name of Protected Land	Type *	Acres	Year	Organization Responsible for Enforcement
Hillsboro Branch – B&M RR	PO	5 Miles		State (NH Dept Resources & Economic Development – NH DRED)
Gregg/Sleeper	PO	18	1974	Town of Deering
Lindquist	CE	13	1998	Town of Deering
Titcomb	CE	60	1997	Town of Deering
Deering Wildlife Sanctuary	PO	585	1997/98	Audobon Society of NH
Young	CE	21	1979	Audobon Society of NH
Levesque and Kilbride	CE	19	1991	Audobon Society of NH
R Jarvis	CE	5	1998	Audobon Society of NH
E Jarvis	CE	50	1998	Audobon Society of NH
North Road Wetland	PO	2		Town of Deering
Garland	CE	6	1995	Town of Deering
Vincent State Forest	CE	239	1936/53/54	State (NHDRED)
Roy	CE	14	1990	Town of Deering
Shepard's Crossing	CE	50	1990	Town of Deering
Leghorn	PO	40	1989	Town of Deering
Yeaple Family	PO	70	1998	Society for the Protection of NH Forests (SPNHF)
Hodgden Pasture	PO	120	1975	New England Forestry Foundation
John & Anna King Forest	CE	311	1988	SPNHF
Deering Preserve	PO	210	1999	SPNHF
French	PO	267	1976	SPNHF
Wilkins-Campbell	CE	210	1999	SPNHF
Spragg	CE	5	1999	SPNHF
Sunderland	CE	6	1996	Piscataquog Watershed Association
Petty	CE	20	1998	Piscataquog Watershed Association
Thompson	CE	120/17	1995/98	SPNHF
Cope	CE	132/14	1995/97	SPNHF
Fish & Game	CE	100	2002	Town of Deering
Chamberlain	CE	100	2002	SPNHF

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McAlister	CE	199	2003	Town of Deering
Rush	FS	300	2002	SPNHF
Wasserman	CE	70	2002	Piscataquog Watershed Association
Total Acres		3,393		

*Source: 2002 Digital Tax Maps; Subcommittee Input;
PO – Privately owned; CE – Conservation easement; FS – Fee Simple

Table VI-16
Public Lands

Map-Lot	Owner	Location	Used for	Acres
204-2	Audubon Society of NH	North Road		38
211-1	Audubon Society of NH	North Road		66
211-3	Audubon Society of NH (Young)	Clement Hill Road		230
211-7	Audubon Society of NH (Young)	Clement Hill Road		250
209-42	Butler Cemetery	Deering Center Road		7.5
223-11	Deering Community Church	Deering Center Road		.66
227-18	Deering Conference Center	Cross Road		13.1
227-39	Deering Conference Center	Deering Center Road		9.4
227-6	Deering Conference Center	Deering Center Road		87
227-26	Deering Historical Society	East Deering Road		0.15
204-1	Deering, Town of (Sylvan Acres, Inc)	North Road		3.9
204-22	Deering, Town of (Aucoin)	North Road		1.652
209-19	Deering, Town of (Dunlap)	Manselville Road		13.4
209-20	Deering, Town of (Dunlap)	Manselville Road		6.5
209-39	Deering, Town of (Edwards)	Manselville Road		0.04
213-1	Deering, Town of	East Deering Road		0.61
213-3	Deering, Town of	East Deering Road		0.40
218-33	Deering, Town of	Old County Road	Murdough Station	0.66
223-1	Deering, Town of	Deering Center Road		2.5
223-12	Deering, Town of	Deering Center Road		0.31
223-28	Deering, Town of	Deering Center Road		1.5
227-27	Deering, Town of	East Deering Road	E Deering Cemetery	1.6
228-30	Deering, Town of	Reservoir Road	Cemetery	0.04
228-7	Deering, Town of	Deering Center Road	Donovan Station	2.05
229-8	Deering, Town of	Zoski Road		0.04
231-1	Deering, Town of	2nd NH Turnpike	McAllister Station	0.576

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232-10	Deering, Town of	Bennington Depot Rd		0.03
232-31	Deering, Town of	2nd NH Turnpike	W Deering Cemetery	0.73
234-4	Deering, Town of	Old County Road	Wilkins Cemetery	2.3
243-2	Deering, Town of (Blueberry Hill)	Blueberry Hill Road		2.20
243-8	Deering, Town of (Blueberry Hill)	Blueberry Hill Road		0.28
888-888	Deering, Town of	Long Woods Road		
999-999	Deering, Town of	Bennington Depot Rd		
224-27	Goodall Cemetery	Driscoll Road		0.51
222-10	His Mansion Ministries, Inc	Wolf Hill Road		233
222-8	His Mansion Ministries, Inc	Deering Center Road		77
203-11	NH State of Resources and Econ Devt	Quaker Street	Vincent State Forest	141
203-13	NH State of Resources and Econ Devt	Quaker Street	Vincent State Forest	93
208-16	NH, State of	Former B&M RR Bed		0.91
208-22	NH, State of	Former B&M RR Bed		1.7
208-8	NH, State of	Former B&M RR Bed		13.4
232-8	NH, State of	Former B&M RR Bed		1.8
235-16	NH, State of	Reservoir Road	Dam & State Lands	0.45
231-11	State of NH	Former B&M RR Bed		11.6
235-22	State of NH	Reservoir Road	Dam & State Lands	3.3
Total Acreage				1,320.8

Source: 2002 Digital Tax Maps, Assessor's Index

Current Use

Property owners can file for reduced property taxes through the Current Use Taxation program. The current use value is the assessed valuation per acre of open space land based upon the income-producing capability of the land in its current use- not its real estate market value. This valuation shall be determined

by the Town's assessor in accordance with the range of current use values established by the Current Use Board (CUB) and in accordance with the class, type, grade, and location of land. Owners of parcels of land which are not anticipated to be used for a different type of use in the future can apply at the Town Office for the following categories:

- "Farm land" means any cleared land devoted to or capable of agricultural or horticultural use as determined and classified by criteria developed by the Commissioner of Agriculture, Markets, and Food and adopted by the CUB.
- "Forest land" means any land growing trees as determined and classified by criteria developed by the State Forester and adopted by the CUB. For the purposes of this paragraph, the CUB shall recognize the cost of responsible land stewardship in the determination of assessment ranges.
- "Open space land" means any or all farm land, forest land, or unproductive land as defined by this section. However, "open space land" shall not include any property held by a city, town or district in another city or town for the purpose of a water supply or flood control, for which a payment in place of taxes is made in accordance with RSA 72:11.
- "Unproductive land" means land, including wetlands, which by its nature is incapable of producing agricultural or forest products due to poor soil or site characteristics, or the location of which renders it inaccessible or impractical to harvest agricultural or forest products, as determined and classified by criteria developed by the CUB. The CUB shall develop only one category for all unproductive land, setting its current use value equal to that of the lowest current use value established by the CUB for any other category.
- "Wetlands" means those areas of farm, forest and unproductive land that are inundated or saturated by surface water or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions.

A land use change tax shall be levied when the land use changes from open space use to a non-qualifying use.

Of the 20,288 acres in Deering, over 14,800 acres (73%) was in current use in 2002, the lowest figure since 1996.

Table VI-17
Current Use Acreages by Land Type, 1993-2002

CU Acreage by Land Type	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Farm Land	1,224.2	726.1	720.1	769.9	814.0	744.0	749.0	767.4	764.3	766.9
Forest Land	12,118.6	12,550.8	12,685.7	13,105.3	13,295.9	12,836.6	12,889.8	13,004.1	13,025.2	12,965.4
Unproductive Land	615.8	516.1	516.1	627.2	632.2	223.0	1,387.8	1,110.9	1,115.9	1,085.9
Wet Land	139.1	691.7	647.7	131.1	153.0	785.2	n/a	n/a	n/a	n/a
Total CU Acres	14,097.7	14,484.6	14,569.5	14,633.5	14,895.0	15,155.0	15,027.0	14,883.0	14,910.2	14,822.9

Sources: Deering Annual Reports; numbers have been rounded for ease of examination

The yearly amount of land use change tax collected over the past 10 years has increased from \$1,223 in 1993 to \$8,838 in 2002. Between 1999 and 2002, the figure has averaged \$9002 per year. This recent change signifies that development is beginning to increase in speed over the last five years.

Table VI-18
Land Use Change Tax Collected, 1993-2002

	Land Use Change Tax Collected
1993	\$1,223
1994	\$2,102
1995	\$871
1996	\$380
1997	\$4,502
1998	\$0
1999	\$6,299
2000	\$8,305

2001	\$12,564
2002	\$8,838

Sources: Deering Annual Reports and Town Files

To further this assumption, Table VI-19 displays that in 1998, this year was the last that any additional land was added to current use status.

Table VI-19
Current Use Acreage Statistics, 1993-2002

Acreage Statistics	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Total Acres in CU	14,097.7	14,484.6	14,569.5	14,633.5	14,895.0	15,155	15,027	14,883	14,910.2	14,822.9
Removed from CU	1.5	2.65	1.57	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Added to CU	---	386.95	84.89	63.93	261.53	260.01	---	---	---	---

Sources: Deering Annual Reports

Agricultural Resources

Prime farmland soils, soils of statewide importance, and soils of local importance to Hillsborough County are depicted using the 1981 & 1985 Soil Conservation Service (now Natural Resources Conservation Service, the NRCS) Survey digital information on the *Agriculture and Forestry Soils* Map.

Prime farmland soils are described nationally as land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops and are also available for these uses.

Categorized soils of Statewide importance have properties that exclude them from the prime farmland list. However, they are important to agriculture in the State of New Hampshire. They produce fair to good crop yields when properly treated and managed. As a general rule, erosion control and irrigation practices are necessary to produce high-yield crops.

Soils of local importance are identified by County agencies within the State. These soils also support the production of food, feed, fiber, forage, and oilseed crops. These soils produce fair to good crops when managed properly.

The following is a list of identified active farms in Deering which are extremely important to protect from development or other change of use:

Table VI-20
Active Farms or Agriculture in Deering

Name	Location	Products or Use
Clarke's	Johnson Rd on Contoocook R	Grass, hay sorghum
Carol Greene's	Holton Crossing Rd	Mows
Chauncey's Field	Contoocook River	Farmed for corn, pumpkins, etc
McAllister	2 nd NH Tpke & Contoocook R	Farmed hay and corn
Kiblins	Contoocook River on RR row	Hay
Platts Field	Contoocook River on RR row	Corn
Dawson's Field	Old Clement Hill Road	Hayed
Dawson's Field	Clement Hill Road	Hayed
Vogelin's Field	Clement Hill Road	Hayed
Copadis Fields	Peter Wood Hill Road	Hayed
Dudley Brook	East Deering Road	Mowed Only
Chamberlin	West of East Deering Road	Mowed Only
Wolf's Field	Peter Wood Hill Road	Sheep pasturage
Mitchies Field (old name)	East Deering Road	Mowed
Burn's Field	East Deering Road	Mowed
Swenson's Field	East Deering Road	Mowed
Albert's Field	Range Road & Driscoll Road	Mowed
Old Driscoll Farm	Driscoll Road & Glen Road	Mowed
K Robinsons Fields	East Deering Road	Mowed
Old Whitney Fields	East Deering Road	Mowed
Conference Field	Deering Center Rd & Cross Rd	Mowed
Wasserman's	Deering Center Road	Not maintained at this time

Frederick's et al	Deering Center Road	Mowed
Rushe's Fields	Range Road & Tubbs Hill Rd	Mowed
Carew's Field	Deering Center Road	Mowed
His Mansion	Wolfe Hill Road & His Mansion Road	Garden plots & cow pasture, 26A pasture
Dutlons Field	Deering Center Road	Hayed
Wallace Woods Fields	Deering Center Road	Hayed
Overlook	Old County Road	Mowed
Daniels (reclaimed as field)	Deering Center Road	Mowed
Patel (horse farm)	Hedgehog Mountain Road	Horse pasture
Bellevue's Field	Hedgehog Mountain Road	Mow
Maine's Field (created recently)	Old County Road	Wildlife fields planting
Unnamed off Old County Rd	Old County Road	Mowed
Wamsley Field	Old County Road	Hayed
Wilkins Easement (Forest Society)	Old County Road at Deering Reservoir	Wildlife Plantings
Sprague's	Wolfe Hill Road	Hayed
Polings	Wolfe Hill Road	Mowed
Pierce	Pierce Road	Grazes horses
Unnamed south of Deering Reservoir	South of Deering Reservoir	Mowed
Valley (Max Shermer)	Reservoir Road	Mowed
Unnamed off of Reservoir Road	Reservoir Road	Hayed
Unnamed corner of Reservoir Rd & Old County Rd	Reservoir Road at Old County Rd	Mowed
Farrell's Fields	Farrell Hill Road	Mowed
Sherwoods Field	Reservoir Road	Mowed
Garingers Field	Reservoir Road	Mowed
Kuhn Fields	Sky Farm Road	Mowed
Allen's Old Place	Dickey Hill Road	Mowed

Source: Subcommittee input

Forest Resources

The *Agriculture and Forestry Soils* Map depicts the location of the best soils for both agriculture and forestry in Deering. These areas should be considered for protection when impending development encroaches upon these areas.

Town Forests

Deering currently does not have a Town Forest despite the large number of conservation easements or privately owned conservation land in Town. The Town should seek to identify one or more contiguous parcels to purchase which would adequately serve as a Town Forest. Town Forests allow recreation, provide for wildlife habitat, and generate a steady income of timber revenue.

Forest Management

Forestry provides a living for people in Deering, and the timber tax it generates provides funds to the Town. Forests are a renewable resource and a source of income for many Deering families, and future sustainable forestry activities should be encouraged.

In 2003, there were 19 intents to cut filed with the Town of Deering, yielding a total of 492.5 acres to be cut. In 2002, the 19 intents to cut filed totaled 709 acres and \$30,748 dollars in revenue to the Town. Only a small few of the same lots were cut within the three-year time span. Over the past 10 years, timber revenues have generated nearly \$161,000 for the Town.

Table VI-21
Timber Tax Collections, 1993-2003

	Timber Tax Collected
1993	\$3,559
1994	\$10,491
1995	\$18,833
1996	\$13,323
1997	\$15,133
1998	\$17,362
1999	\$16,383
2000	\$18,670

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2001	\$16,436
2002	\$30,748

Sources: Deering Annual Reports and Town Files (numbers rounded)

Table VI-22
Intents to Cut 2001 – 2003

	Map	Lot	Type of Wood	Acreage
2003	218	21	White Pine, Ash, Oak, Pallet/Ties, Cordwood	7
	237	23	White Pine	10
	205	1	White Pine, Hemlock, Hard Maple, White Birch, Yellow Birch, Oak, Ash, Beech & Soft Maple, Pallet/Ties, Cordwood	15
	229	71	White Pine, Hemlock, Hard Maple, White Birch, Yellow Birch, Oak, Ash, Beech & Soft Maple, Pallet/Ties, Poplar, Hardwood & Aspen, Pine	15
	229	58	White Pine	6
	222	3	White Birch, Oak, Ash, Beech & Soft Maple, Pallet/Ties, Cordwood	
	240	28	White Pine, Yellow Birch, Oak, Pallet/Ties	22
	218	28	White Pine, Oak, Pallet/Ties, Whole Tree Chips	80
	209	38	White Birch	3
	227	18	White Pine, Hemlock	9.5
	201	2	White Pine, Hemlock, Oak, Pallet/Ties, Cordwood	60
	235	31	White Birch	23
	235	29	Yellow Birch, Oak, Ash, Beech & Soft Maple, Pallet/Ties, Pine, Cordwood	
	221	14	Hemlock, Oak, Ash, Beech & Soft Maple, Pallet/Ties, Pine, Cordwood	40
	227	19	White Pine, Red Pine, Hard Maple, White Birch, Oak, Pallet/Ties, Cherry	14
	218	23	White Pine, Hemlock, Red Pine	100
	229	55	White Pine, Hemlock, Hard Maple, White Birch, Oak, Ash	8
	223	10	White Pine, Spruce & Fir, Hard Maple, White Birch, Yellow Birch, Oak, Ash, Beech & Soft Maple, Poplar, Hemlock	20
	226	13	White pine	60
Total Acreage for 2003				492.5
2002	230	2	Hard Maple, White Birch, Yellow Birch, Oak, Ash, Beech & Soft Maple, Pallet/Ties, Black Birch, Hardwood & Aspen	46
	218	21	White Pine, Hemlock, Hard Maple, White Birch, Yellow Birch, Oak, Ash, Black Cherry, Poplar, Pine, Hemlock, Cordwood	46
	218	28	White Pine, Oak, Beech & Soft Maple, Pallet/Ties, Tree chips	20

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	218	26	White Pine, Hemlock, Spruce/Fir, Hard Maple, White Birch, Yellow Birch, Oak, Ash, Beech/S. Maple, Pallet/Ties, Pine, Birch Bolts, Cordwood	200
	209	11	White Pine, Hemlock, Oak, Ash, Pallet/Ties, Tree Chips, Cordwood	4.75
	221	14	White Pine, Hemlock, Hard Maple, White Birch, Yellow Birch, Oak, Ash, Beech & Soft Maple, Pallet/Ties, Birch Bolts	100
	232	35	White Pine, Tree Chips	5
	219	20	White Pine, Hemlock, Spruce/Fir	18
	234	20	White Pine, Hemlock, Red Pine, White Birch, Oak, Pallet/Ties, Hardwood & Aspen, Pine	1
	233	13	White Pine, Oak, Pallet/Ties, Cordwood	12
	237	18	White Pine, Pine	2
	224	24	White Pine, Red Pine, Hard Maple, Oak, Beech & Soft Maple, Pallet/Ties, Pine	4.5
	215	30	White Pine, Hemlock, White Birch, Beech & Soft Maple, Pine, Hemlock, Cordwood	10
	211	3	White Pine	30
	211	7	Hemlock, Hard Maple, White Birch, Yellow Birch, Oak, Ash, Beech & Soft Maple, Elm, Cordwood	
	240	25	White Pine	15
	235	10	White Pine	70
	240	11	Oak	40
	218	29	White Pine, Hemlock, Spruce/Fir, Hard Maple, White Birch, Yellow Birch, Oak, Ash, Beech & Soft Maple	85
Total Acreage for 2002				709.25
2001	220	11	White pine, Tree chips	9
	223	10	White Pine, Hard Maple, White Birch, Yellow Birch, Oak, Ash, Beech & Soft Maple, Pine, Hemlock, Cordwood	1.5
	218	12	White Pine, Oak	25
	243	4	White Pine, Hemlock, Oak, Beech & Soft Maple, Pallet/Ties, Hardwood & Aspen, Hemlock, Cordwood	4
	218	17	White Pine	7
	218	16	Hemlock, Oak Pallet/Ties, Hardwood & Aspen	
	224	22	White Pine	15
	224	23	White Birch, Oak, Beech & Soft Maple, Pallet/Ties	
	244	9	White Pine, Hemlock, Hard Maple, White Birch, Oak, Ash, Beech & Soft Maple	15
	218	9	White Pine	3

	218	10		
	220	11	White Pine, Tree Chips	11
	241	11	Hard Maple, White Birch, Yellow Birch, Oak, Ash, Beech & Soft Maple, Pallet/Ties, Cherry, Hardwood & Aspen, Tree chips	105
	243	15	White Pine	4.5
	220	6	White Pine	6.5
	218	37	White Pine	10
	238	7	White Pine, Oak, Pallet/Ties	36
	242	3	White Pine, Hemlock, White Birch, Oak, Ash, Beech & Soft Maple, Pallet/Tie, Hemlock	6
	231	12	Tree Chips	15
	231	8	Hemlock, Oak, Pallet/Tie, Hemlock	20
Total Acreage for 2001				293.5

Sources: Deering Town Files

The predominant woods being harvested in Deering are white pine, oak, hemlock, and birch varieties.

Tree Farms

New Tree Farms are being added regularly to the official Tree Farm database of the State of New Hampshire and, as such, the numbers change constantly. At present, there are 1,624 Tree Farms in the state of New Hampshire, totaling 850,520 acres. To qualify as a tree farm, the forest must be considered a “well-managed forest land.” Several private, non-profit organizations also manage their lands actively such as the Forest Society, the New England Forestry Foundation, the Audubon Society of NH, the Nature Conservancy, and other local or regional land trusts.

According to the NH Tree Farm Committee, five Tree Farms, totaling 661 acres, are within Deering, but locations could not be given. The Subcommittee felt this was inaccurate and that many more exist within Town. The following conservation lands in Table VI-23 are known Tree Farms. They are all contiguous parcels in the southwestern portion of Town.

Table VI-23
Tree Farms in Deering

Name	Location	Products or Use
Hodgden Pasture (NE Forestry Foundation)	Northwest of Hunter's Pond	Woodlot
John & Anna King Forest (SPNHF)	Second NH Tpke Rd	Woodlot
Deering Preserve (SPNHF)	Falls Road	Woodlot
French (SPNHF)	Old County Road	
Wilkins-Campbell (SPNHF)	Between Deering Reservoir & Old County Road	Woodlot and small field periodically maintained for wildlife habitat

Source: Subcommittee input

Geologic Resources

The *Conservation and Public Lands and Scenic Vistas Map* depicts the hills and mountains in Deering. Aquifers were discussed previously in the Water Resources section. Nine promontories were identified in Table VI-24.

Table VI-24
Hills and Mountains

Name	Elevation
Bartlett Hill	1,120'
Clark Summit (Wolf Hill)	1,520'
Gove Hill	883'
Goodale Hill	1,160'
Gregg Hill	1,320'
Hedgehog Hill	1,340'
Locke Hill	1,000'
Sodom Hill	1,150"
Wilson Hill	1,400'

Sources: CNHRPC 1999 *Natural, Cultural and Historical Resources Inventory*

A natural bedrock dam is featured on the Piscataquog River just north of an unnamed pond between Old Francestown Road and Deering Center Road. Two historic mines and two prehistoric archaeological sites are located in Deering. An old lead mine is located off of Lead Mine Road and a second mine is located on the Hedgehog Mountain ridge line between Second NH Turnpike and Old County Road. Two prehistoric archaeology sites (anecdotal evidence indicates the sites contained dinosaur fossils) are located at the top of Hedgehog Mountain. These sites are displayed on the *Bedrock Geology Map*.

Surficial and Bedrock Geology

The *Bedrock Geology Map* depicts the five geologic formations found in Deering underground, and illustrates the location of the four seismic lines. Bedrock is the solid rock material found underneath, vegetation, soil and loose rock.

- **Ds1-6** Spaulding Tonalite (of the NH Plutonic Suite, Late to Early Devonian) – weakly foliated to nonfoliated, spotted biotite quartz diorite, tonalite,

granodiorite, and granite; garnet and muscovite may or may not be present. This bedrock underlies almost the entire southern border of Deering. A wider strip of this bedrock underlies the entire western border of Deering, approximately two-thirds of the eastern border, and half of the northern border of the Town.

- **Dl** Littleton Formation (Metasedimentary and Metavolcanic, Lower Devonian) – gray metapelite and metawacke and subordinate metavolcanic rocks; generally but not everywhere, conformable with the underlying Fitch or Madrid Formations. Fossiliferous in western NH. A wide strip of this bedrock runs from the northeast corner of Deering to the southeast corner. The eastern border of the bedrock (following it from the northeast corner) bisects Deering Center Road and the western border, starting past Lead Mine Road, reaches westward almost to Long Woods Road.
- **Sm** Madrid Formation (Metasedimentary and Metavolcanic, Upper Silurian) – massive to weakly foliated, purple biotite–feldspar granofels, layered calc–silicate, and dark pelitic–sulfidic schist containing calc–silicate pods in upper member; an eastern facies equivalent to the upper part of the Fitch Formation. A strip of this bedrock runs from just north of Clement Hill Road down to the southwestern border of Deering. The northwestern portion of the Deering Reservoir is surrounded by this bedrock.
- **Ssf** Small Falls Formation (Metasedimentary and Metavolcanic, Upper to Middle Silurian; Ludlovian and Wenlockian) – very rusty weathering, thinly bedded sulfidic–graphitic schist and pyrrhotitic calc–silicate granofels. Eastern facies equivalent to lower part of the Fitch Formation. Two thin strips of this bedrock are found in Deering. The northern strip runs from the eastern border southwest to the southern border of the Town, splitting the Deering Reservoir in half. The southern strip runs from just north of the intersection of Glen Road and Tubbs Hill Road to just south of the intersection of Reservoir Road and Old County Road.
- **Sp** Perry Mountain Formation (Metasedimentary and Metavolcanic, Middle to Lower Silurian) – sharply interbedded quartzites, light–gray nongraphitic

metapelite, and “fast-graded” metaturbidites. Coticule layers common. This bedrock runs from the eastern border of Deering southwest to the southern border of Deering. The southeastern section of the Deering Reservoir is found within this section of bedrock.

- **Sru** Upper part of Rangeley Formation (Lower Silurian; Llandoveryan) – rusty-weathering, pelitic schist, metasandstone, and local coarse-grained metasandstone lentils; calc-silicate pods common; minor coticule. Probably equivalent to member C of Rangeley Formation of Maine. This formation is found in the very tip of the southeastern corner, cutting across Bartlett Hill Road.

Seismic Geology

Four seismic lines are found in Deering. Two are perpendicular to Manselville Brook, on opposite sides, just south of Manselville Road. The third is found just south of Holton Crossing Road. The fourth is parallel to Long Woods Road, on the west. Each of the four is approximately 1/8 of a mile in length. These are illustrated on the *Bedrock Geology Map*.

Excavation Materials

The active Johnson Pit and the reclaimed McAllister's Pit were heavily utilized by the Town of Deering. Today, Daniel's Gravel Pit provides the Town's sole source of sand and gravel. Gravel being excavated in Deering is utilized locally, developing a positive self-sufficiency and supporting the local economy. The sand and gravel pits are depicted on the *Natural Resource Land Use Map*.

Table VI-25
Excavation Operations

Name or Location	Status	Map & Lot #	Type of Material(s)
McAllister's Pit	Closed and reclaimed	220-18	Sand and gravel
Daniel's Gravel Pit	Active	209-11	Sand and gravel
Johnson Pit	Active - currently being reclaimed	216-6	Sand and gravel
B Johnson Pit	Not active, not reclaimed	227-38	Sand and gravel
Former Johnson Pit	Grandfathered - not reclaimed	236-18	Sand and gravel

Sources: Subcommittee Input

Steep Slopes

Steep slopes greater than 15% can be found at any elevation but are more commonly associated with jutting hills and mountains, along roadways, or surrounding bodies of water. Slopes are notable for their hindrance to development and should also be identified for their erosion and rockslide potential, particularly along highways.

Within Deering, over two miles of steep slopes over 15% are located along the top of Hedgehog Mountain. Additional steep slopes are located along Long Woods Road, Mountain View Lane, and White Gate Road. Slopes are found at the summits of Wilson Hill, Clark Summitt, Locke Hill, Bartlett Hill, and Cove Hill. Lastly, similar slopes are located at the southern end of Deering Reservoir (along White Gate Road) and on the eastern side of the Lake along Baldwin Road; Dudley Pond has steep slopes bounding the eastern side. The Town should ensure that these areas, depicted on the *Bedrock Geology Map*, are protected from development.

Ecological Resources

Corridors

Corridors and greenways are typically used not only by people for recreation or transportation, but also by wildlife to travel from one habitat to another.

Maintaining viable and undeveloped corridors ultimately measures the biological success of the animals, particularly larger mammals, within an area.

Due to the relatively undeveloped nature of Deering, wildlife is able to move freely through the Town. There are three primarily riparian corridors within Deering that link over 75% of all wetland soils.

The first large riparian corridor follows the Contoocook River south to north on the Town's western boundary. The Gerini and Manselville Brooks are the primary tributaries. The Town's largest continuous wetland is associated with the Manselville Brook in the northwest corner of Town and together with the other wetlands in this area represent about 25% of the Town's total wetlands. The river's undeveloped banks and the close association with the Town's highest concentration of farms and non-forested habitat offer many animals a resource-rich habitat.

The second large riparian corridor follows the Piscataquog River south and to the east from the Deering Lake (Deering Reservoir). There are several medium and smaller wetlands that dot the entire length of the River and also represent about 25% of Deering's wetlands.

The third riparian corridor originates in north-central Deering with the Smith Brook. This flow runs east and then north and is joined by the Patten Brook in the northeast corner of Town. Patten Brook in turn flows southeast into Dudley Brook. Dudley Brook flows south along the Town's eastern boundary where it eventually joins the Piscataquog in Weare. Associated with Smith Brook is one large wetland and along the entire length of this corridor are several medium and smaller wetlands that collectively represent about 25% of Deering wetlands.

The principal mountain ridge corridor exists in West Deering along Hedgehog Mountain and Wilson Hill. This is a north-south steep ridge that divides the Contoocook River watersheds from the Piscataquog River watersheds. The steepness and undeveloped nature of this feature provides seclusion for the variety of wildlife and easy access to all parts of Deering.

A large utility line corridor cuts through Deering from the southeast corner to the northwest corner. This corridor offers a long, undisturbed path for wildlife to use when traveling between habitats. Also the unique nature of the habitat created by the utility lines offers a new place for many plants and animals to live.

A railroad corridor along Deering's western border runs parallel to the Contoocook River. Railroad corridors, like utility corridors, offer wildlife a long, uninterrupted corridor to travel along. This rail corridor is no longer in use and has been turned into a public trail owned by the State of New Hampshire.

Exemplary Natural Communities

Other special, undisturbed lands are essential for the biological diversity of plants and animals. The more bio-diversity found within an area, the more valuable and self-sustaining the community becomes from both ecological and economic perspectives.

Currently, Deering enjoys a variety of exemplary natural communities that have not been significantly disturbed. Two areas are worthy of special recognition because of large properties protected by conservation easements.

The first general area centers around Falls Road in southeast Deering. This includes the King Forest to the south, the Hodgden Pasture to the north and the French easement to the east. There is a large block of land with an impressive mix of natural features including pond, stream, wetlands, meadows, and forests. Present is one of the Town's two heron rookeries and this area consistently is home for the highest concentration of seasonal and migratory waterfowl.

The second general area is centered along Clement Hill Road in north-central Deering. This would include the Deering Wildlife Sanctuary to the south, the lead mine and Mud Pond wetlands to the north, and Dudley Pond and Vincent State Forest area to the east. This large block of land also has a rich mixture of natural features that are home to impressive collections of diverse wildlife and the Town's second heron rookery.

A SNE Floodplain Forest has been recently reported in Deering to the NH Natural Heritage Inventory.

NH Natural Heritage Inventory (NHI)

Although rich and diverse plant and animal species are known to exist in Deering, no outstanding plant and animal species have been identified for the Natural Heritage Inventory in the Town. The Town should work to assess its rare and endangered plants and animals through education and enlist the assistance of volunteers.

Exotic Weed Species

There are exotic plant species in Deering such as Black Swallow-wort, Milfoil, and Japanese Knotweed. The Black Swallow-wort is an invasive vine plant that has been frequently sighted, and eliminated, around Town including at the Church. The Milfoil is being monitored yearly, although none has been found yet in Deering Reservoir. Although Purple Loose Strife is not yet a problem in Deering, area school children will be raising beetles to fight the plant. The possibility of the existence of exotic species should be continually monitored.

At Town Meeting 2003, a warrant article was passed which ensures that the Town can hire people to monitor the public boat launch on Deering Reservoir during summer weekends to reduce the chances of a boat entering the Lake with exotic aquatic weeds. The individuals will also hand out educational literature. A grant is currently being sought from the NH Lakes Association to augment the money appropriated at Town Meeting.

Aquatic Plant Species

Deering Reservoir is home to a number of aquatic plant species. The following plants are found in and around the Reservoir, but are classified as “sparse”: Bur Reed, Cattail, Yellow Water Lily, Swamp Candle, Hedge Hyssop, Three Way Sedge, Pipewort, Bulrush, Arrowhead, Pondweek, Rush and Grass Family. Tapegrass is also present, but it has been classified as “scattered” instead of “sparse”.

Dudley Lake is also home to a number of aquatic plant species. Unlike the Deering Reservoir, several of the plants in and around Dudley Lake are classified as “common.” Filamentous green Algae, Pickerelweed, and Water Lobelia are the common plants. Pipewort, Bladderwort, Yellow Water Lily, Tape Grass, Spike Rush, Bur Reed, Three-way Sedge, and Bulrush have been classified as “sparse” on Dudley Lake. Finally, Freshwater Sponge is considered “scattered” on the Lake.

Wildlife in Deering

Deering’s rural charm attracts a variety of wildlife which often live alongside residents. Commonly sighted mammals include deer, fox, rabbits, fisher cats,

coyotes, and moose. A large population of black bear reside in Town. Hoot owls, bard owls, screech owls, and saw-whet owls make their presence known.

An independent study is currently being completed which documents the songbirds along the Contoocook River. In addition, the Lake Association has an ongoing study of the loons on Deering Reservoir.

Wood Duck Program

The Deering Conservation Commission (DCC) has maintained a fairly constant number of properly maintained and predator protected boxes since 1987. The widely spaced boxes across the numerous surface waters of the Town have not in the past seen problems with density strife and attraction of predators or nest competitors. The DCC management plan was designed to provide the best opportunity for natural regulation to remain intact while providing increased numbers of wood ducks.

The 2002 hatch year was not a good one. The severity of the winter solidly froze most surface waters but the deep snow cover made checking and cleaning the boxes for the 2003–breeding season a real challenge. However, a total of sixty DCC nesting boxes were checked as well as two Ducks Unlimited Boxes on Fulton Pond. A total of five boxes were lost due to a variety of factors and four boxes were constructed in 2002 and were installed for the 2003–breeding season. Thus, a total of sixty–four nesting boxes will be available for the 2003–breeding season.

The sixty boxes checked revealed that twenty–eight (32%) of the boxes had seen some use by ducks. The hatched to unhatched egg ratio of 42% to 58% is less than the normal average of 70% hatched to 30% unhatched. The reasons for the large unhatched number of eggs are variable and can include nest predators, unfavorable weather conditions, and density strife. Table VI-26 summarizes the Wood Duck Program results.

Table VI-26
Wood Duck Program, 1994–2002

Year	Hatched	Unhatched	Total Eggs	% Hatched	% Unhatched
1994	70	23	93	67%	33%
1995	119	36	155	70%	30%
1996	135	68	203	70%	30%
1997	119	58	177	67%	33%
1998	144	29	173	83%	17%
1999	162	80	242	67%	33%
2000	142	119	261	54%	46%

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2001	153	43	196	78%	22%
				for 54 boxes checked to date, 10 to go	
2002	84	114	198	42%	58%

Source: Town Gathered Data

Loon

The Loon Preservation Committee collects annual data on loon in Deering Reservoir. Field staff, volunteers, and collaborators have been collecting data on loon in NH for the last 27 years. In Deering, the number of pairs and chicks has remained relatively constant over the last ten years.

Table VI-27
Loon on Deering Reservoir, 1993-2002

Year	Territorial Pairs	Nesting Pairs	Chicks Hatched	Chicks Survived
1993	1	1	2	1
1994	2	1	1	1
1995	1	1	1	1
1996	1	0	---	---
1997	1	1	1	1
1998	1	1	2	2
1999	1	1	0	0
2000	1	1	2	1
2001	1	1	1	1
2002	1	1	2	2

Source: Loon Preservation Committee

Fish

The West Branch of the Piscataquog River is stocked with 330 brown trout, 690 brook trout, and 650 rainbow trout per year in Weare. The Contoocook River is stocked with 590 brown trout and 850 rainbow trout yearly in Hillsborough. Smelt, small mouth bass, and large mouth bass are native in the Contoocook. In Dudley Pond, large mouth bass are native. A children's pond at the Fish and Game property is stocked yearly with 300 rainbow trout and 300 brown trout.

Viewsheds

Viewsheds have been identified on the *Conservation and Public Lands and Vistas* Map. Viewsheds, or scenic vistas, are particularly important to protect from development. Ironically, these vantage points are commonly the most desirable to develop because they afford the best views.

Table VI-28
Viewsheds

Name or Location	Direction(s)
South of Rangeway Road	South
Wilson Hill	West
Reservoir Road	Northwest onto Reservoir
Gregg Hill Road	South
Hedgehog Mountain Summit	West onto McAllister property
Peter Woodhill Road (south)	East
Peter Woodhill Road (north)	South
Black Fox Pond	West onto Black Fox Pond
Sodom Hill	West
Clement Hill Road	North

Sources: Subcommittee Input

NATURAL FEATURE AND RESOURCE CONCERNS

Deering faces a number of environmental challenges which must be recognized in order to prevent additional contamination, loss or pollution. Many of these problems have require a multi-solution approach, such as utilizing ordinances in combination with stricter enforcement and public education.

Contamination of Water Resources

Contamination of both groundwater and surface water resources in the Town of Deering is a problem, which has already availed itself. The Town has had to replace several shallow overburden wells over the years due to contamination with road deicing chemicals. The migration of deicing chemicals from the Town DPW yard also was responsible for contaminating the drinking water well on a downgradient property. Contamination of the stratified drift aquifer in the West Deering section of Town has been documented. One residence has had a water treatment system installed at their residence due to methyl tertiary butyl ether (MTBE) contamination. This contamination is caused by gasoline releases. The suspected source of this well contamination is an upgradient automobile junkyard on the abutting property.

The most insidious type of water contamination comes from non-point sources. Non-point pollution generally results from man's activity. Over the last several years an increase in the conductivity of two feeder streams to Deering Lake has been noticed. These increases were deemed to be due to the activities of man such as roadway runoff, forestry, residential development, or roadway deicing chemicals. Future investigation of these areas are planned.

Over the past years, problems with Aboveground Storage Tanks (AST's) and Underground Storage Tanks (UST's) have resulted in soil and groundwater contamination. UST releases occurred at the Old Town Garage and the Deering Conference Center both off of Route 149.

Point source pollution of water resources from septic systems, floor drains, dry wells, UST's, AST's, junk automobiles, burying wastes, and direct deposition to the ground surface are an ongoing problem in rural Towns such as Deering

where on site potable drinking water wells, sanitary disposal systems, and fuel storage systems exist on the same property. Businesses that store or use hazardous chemicals or petroleum products present even more potential for a release to the water resources of the Town.

Loss of Agricultural Lands

Farmers originally settled the Town of Deering and for a long period farming was the principal occupation of its inhabitants. The fields were cleared from the forest for hay, fruit, and vegetable crops. Much of the produce sold at the Hillsboro "Bridge Village" grocery store came from the farms of Deering. At this time, farmland and open fields were the dominant features of Deering's landscape.

The first decline in agricultural land occurred after the Civil War. Young men returning from the war abandoned the family farm and moved west to claim new homesteads on richer land. However, some of the old family farms persisted. The industrial revolution also hastened the demise of the family farm. From the 1870's on, people abandoned the farm life to work in the city for a weekly paycheck. By 1892, there were only 112 farms left in Deering.

Although the old families were finding that they could not make a living farming and were selling or abandoning their farms, a new group of would-be farmers were eagerly buying up those very farms which generations of the more experienced Deering settlers had plowed for more than 100 years. These newcomers, so eager to buy up the abandoned farms, were first generation European immigrants with dreams of owning their own land. They had no way of knowing that farming in Deering could not be profitable.

The new immigrant farmers kept the farms alive into the 1930's. As times changed, so did the crops and the landscape. In 1895, there were 192 sheep in Deering but by 1935 there were only ten sheep. The dairy business and production of beef cattle flourished until the 1930's when the high cost of refrigeration equipment, stricter sanitary laws, and tuberculin testing resulted in many dairy farms closing.

Many farmers switched to poultry production. With the switch from sheep and dairy cattle to poultry, there was no more need for hay and pasture fields. As such, the fields were allowed to grow into sprout land and then to forestland.

Poultry production continued to be the prime agricultural pursuit in Deering until the early 1950's. The fowl taxed numbered 1,067 in 1935, 3,370 in 1942, and 5,882 in 1952. The decline then started and by 1961 there were 2,250 fowl reported in the Town Inventory and only 464 by 1968.

By the 1960's, Deering had become a residential and summer community with only a few farms remaining. Scattered remnants of the once extensive fields are all that remained. By the 1970's, there were no individuals in Town who made their living exclusively by farming. By the early 1980's, the Town of Deering had nearly as much wooded land as was present when the first settlers arrived.

However, another group of new immigrants was waiting in the wings. This group of immigrants was not from a foreign country but rather from nearby urbanized areas. Improved roadways, cheap land, economical fuel costs, and the introduction of computers and other communication devices made it possible to own a rural home and to travel to work or work at home. The residential development of the 1980's did not significantly damage the remaining agricultural land. The real estate market collapsed in the late 1980's but has once again returned with renewed vigor.

Currently, the largest active agricultural areas remaining in Town are those of the McAllister Farm and fields in West Deering owned by the Platt dairy farm in Antrim. These fields are planted yearly for silage crops as well as hay. However, a new age breed of farmers is appearing in areas surrounding Deering. There appears to be resurgence in the production of vegetable crops. The urban centers of Boston, Providence, Manchester, and Nashua are now more readily accessed than ever and the desire for farm fresh products in these areas is at an all time high.

Many people in Deering now keep horses and other animals. As such, the need for pasturage has resulted in the forest being cleared to create fields at several locations in Town. Also, the need for hay has resulted in the renewal and maintenance of existing fields to produce hay to sell to the residents of Town.

What the future holds in store for the agricultural land of Deering is hard to predict. It is based in large part on circumstances, which stretch far beyond our Town borders. Variables such as fuel costs, water shortages in the west, development of agricultural land in Florida, and whether the increased desire for farm fresh products continues are just a few pieces of the puzzle. However, you can be sure of one thing here in Deering, if it becomes profitable and affordable someone will fill the void and perhaps these new age farmers will once again be able to make a living from the land as their predecessors did.

No Public Access to Contoocook River

Public access to the Contoocook River has always been with the implied consent of the shoreline landowners. Good put in car top launch locations on the Contoocook River in the Town of Deering are at a premium due to its steep banks and limited road frontage. There are locations along the river which could provide adequate parking for a couple of vehicles and could have a stone filled crib type launch constructed with minimum impact to the shoreline environment. Guaranteed public access to the Contoocook River should be sought to insure the permanent availability of this valuable resources to the citizens of the Town of Deering.

Sprawling Development

The increase in population growth in Deering and other surrounding towns reflect the changing social and economic trends which directly impact our community landscape. Deering residents express the desire to maintain a rural atmosphere by supporting the conservation of open space and the development of small village areas. More stringent regulations should be developed to concentrate development in appropriate areas and allow the large lots in the forested areas to remain open for forestry practices or agriculture.

Light Pollution

Concern has been expressed regarding the future development and expansion of the Crotched Mountain Ski Area and its impact on residents living in the area of Sky Farm Road. Light pollution will be a detriment to the dark night skies when the Ski Area holds its proposed night-time skiing activities. Any such expansion should be determined by Franconia as a development of regional impact. The Town should work closely with the Ski Area, Franconia, and Bennington to ensure that appropriate lighting is installed and that all steps to minimize the effect of light pollution are undertaken.

Noise Pollution

Several activities in Deering, such as the Airport and residential activities, contribute to noise pollution. The Town does not currently have any ordinance in place to address these issues, but it has become a growing concern over the years. The Board of Selectmen would be in charge of adopting this regulation. A draft noise ordinance model follows:

In lieu of any other regulations governing noise in the Town, the following provisions shall apply:

1. Noise levels shall not exceed the standards set forth below (measured in DB(A)'s):

	Daytime	Night time
Residential Uses	60	50
Commercial Uses	65	55
Industrial Uses	70	65

2. Daytime hours are between 7 AM and 8 PM Nighttime hours are between 8 PM and 7 AM

3. Measurements shall be made at the property line, at least four (4) feet from ground level, using a sound level meter meeting the standards prescribed by the American National Standards Institute. Construction authorized by a building permit allows an increase to 75 DBA for daytime hours.

Air Pollution

There have been substantiated reports of weekly residential burning at a home on East Deering Road. Although backyard burning of trash was outlawed by the State in January 2003, homeowners continue to burn trash indoors during the night. Thick black, acrid smoke from the burning travels for nearly a mile in every direction. The Town has had, to date, difficulty documenting the problem and enforcing the law although in the future an enhanced effort will be undertaken.

PROPOSED REGULATORY PRESERVATION MEASURES

There are many techniques available to assist with conserving natural resources. Regulatory protection measures are an important part of a Town's preservation toolkit.

Primary Methods

Although all of the methods listed in this Chapter can be used by Deering, the techniques listed in this section are the most important regulations to develop. They should be among the first considered by the Planning Board and the Town to address Deering's immediate conservation planning issues.

Aesthetics-Based Land Use Regulations

Area: Town-wide

Because the appearance of the community, including views of simple things like tree-lined streets, mixed farm land, forests, historic buildings and water resources that largely define Deering's traditional landscape, is so important to the fabric of the community, there must be a priority placed on preserving them. Planning regulations addressing lot size, placement of buildings, signage, as well as landscaping are typically used to address aesthetic elements of the community.

Environmental Science-Based Regulations

Areas: Deering Reservoir, rivers, wetlands, aquifers, areas of steep slopes

Environmental science-based land use regulations are based directly upon measurable characteristics of the land-base of the community, rather than on possibly arbitrary standards established by people. Regulations based on the characteristics of the land may reflect the actual ability of the land base to sustain development and are often easier to defend against legal challenges than those arbitrarily created.

Village Growth Districts

Areas: East Deering at Cross Road (1/4 mile radius around Church), Town Center, along River in West Deering

An urban growth district allows the community to define one or more areas where growth and development will be concentrated. This typically includes a downtown area and, sometimes, existing areas with higher concentrations of development. Desired growth will take place inside of the district, thus preserving open space in other parts of the Town. Development within the urban growth area can still be regulated by various zoning standards, but density regulations should be adjusted to accommodate a denser development pattern.

Cluster (Open Space) Development Zoning

Area: Town-wide, discouraged in areas of large lot forestry and agricultural zoning

An answer to the sprawling landform created under conventional cookie cutter subdivisions is a new approach to subdivision design for rural areas, as outlined in the book entitled *Conservation Design for Subdivisions: A Practical Guide to Creating Open Space Networks*, by Randall Arendt (Island Press, 1996). Figures in the EXISTING AND FUTURE LAND USE CHAPTER show graphics from Arendt's book depicting the typical scenario for the development of a parcel under the conservation development design process. In its most basic form, the conservation development process can be broken into six logical steps, which are not the typical steps taken for a conventional subdivision.

Under this approach, use existing minimum lot sizes as the basis for conventional residential density on the best soils, with reduced densities according to declining soil quality. The current minimum lot sizes for residential uses should represent the maximum aggregate density on the best soils under the soils-based lot sizing approach. Lower quality soils should require lower density development. Primary conservation areas may include wetlands, steep slopes, aquifer recharge zones, and floodplains. Secondary conservation areas may include stonewalls, viewsheds, prominent vegetation, prominent landforms, prime agricultural soils, historic sites and features, archeological sites, and communities and species identified in the Natural Heritage Inventory.

Secondary Methods

Other ways to help Deering “grow smart” to balance new development with its rural character are discussed.

Large Lot Forestry and Agricultural Zoning

Areas: West Deering, areas of scenic vistas, other existing areas of agricultural use

Planning theory states that dividing developing land, or potentially developing land, into larger lots will slow development and preserve open space and rural character. The goal of these two types of zoning is to provide large enough blocks of land that they can be managed for a specific resource value. If this technique is used, lot sizes that truly reflect the amount of land needed to allow for commercially viable use of the land and are related to the reality of the use of the land in the area must be established.

Overlay Districts

Areas: As appropriate for districts

Overlay zoning districts can be used by communities to define and apply special regulations to a particular resource. Once resource areas of concern are identified, the Planning Board must establish what kind of special regulations apply to that particular resource.

Lake Watershed District

Historic District (East Deering)

Steep Slope/Scenic Vistas District

Agricultural District (West Deering)

Phased Growth Plan

Area: Town-wide

Towns may adopt regulations to control the rate of development. In certain rapid growth situations, slowing the rate of development can be a way to retain some open space from development for a short period of time, during which it may be possible to determine if there is a need or mechanism to preserve it permanently.

Limitations to the Number of Building Permits

Area: Town-wide

One way to help conserve open space in the short-term in a community is to establish a maximum number of new building permits that will be allowed in any given year. The number of permits allowed annually needs to be correlated in some meaningful way with the growth pressure on the community. This type of growth control strategy needs to be carefully crafted to accurately reflect the goals of the community and to avoid the perception of creating “snob zoning.”

Open Space/Village Design Planning

Area: Town-wide

Rather than filling all available space with similar-sized houses centered on uniformly sized lots, this development strategy focuses the construction in a smaller portion of the total land being developed, and provides for permanent protection of the open space not used for construction. The land selected for permanent open space protection should be designed to fulfill the open space interests of the entire community.

NON-REGULATORY PRESERVATION MEASURES

Volunteer efforts to conserve land are recognizable and are often more appreciated than regulatory requirements. Hand in hand, regulatory and non-regulatory methods work together to serve the community's preservation interests.

Conservation Easements

Area: Town-wide

A conservation easement is a permanent, legally binding agreement that ensures that certain uses will never be allowed on that property. Typically conservation easements prevent development of land uses such as construction, subdivision, and mining but allow uses such as agriculture, forestry, wildlife habitat, scenic views, watershed protection, and education. The agreement exists between a willing landowner and a qualified recipient, which can be the Town or State government or various conservation organizations. Each conservation easement is tailored to the interests of the landowner, the receiving entity, and the unique characteristics of the property. The land can be sold or deeded by the original owner and subsequent owners, but an easement is binding to all future owners.

Deering's Method of Land Protection

The Deering Conservation Commission has devised an approach toward land protection that has become quite successful in recent years. The method involves tax maps, 1=1000' scale GIS maps, public outreach, and targeted mailings, but it really begins long before a landowner is approached.

The most important act a Conservation Commission can do is to gain the support of the community. In the 1970s, the Conservation Commission and their families would go out on a spring day to collect roadside trash. Over the years, this has become an annual cleanup day and picnic that involves over 100 families picking up assigned quarter-mile stretches of town roads. The cleanup even goes as far as to pick up old tires dumped illegally on a Class VI road. Since 50% of all parcels greater than fifty acres in Deering are owned by absentee owners, the Clean-up Day succeeds in removing potentially harmful

threats that would not have been taken away for years. This act of volunteerism also preserves the “scenicness” of Deering, which is probably one aspect of the Town that drew people there in the first place. By starting with a small project and using it to show that the Conservation Commission is a group with the Town’s best interest in mind, the commission builds public support for itself. This type of activity builds a foundation for other projects and creates a climate in which people feel they can approach the commission.

Another way of increasing the commission’s exposure is to set up a display with literature on its activities in the Election Day venue. Election Day is typically the time when people are at their most civic-minded, so a stop at the Conservation Commission display could be expected. Along with literature, there could be a sign-up sheet for residents to sign up for a Clean-up Day or other activity, a member to talk to about conservation issues, and a poster of an activity in which the commission has recently taken part. By placing a point of contact in a position to answer questions coming directly from the residents, the commission gets the chance to interact with the people with whom they’re working to protect natural resources and therefore build public support for their measures.

Deering created a 1=1000’ scale GIS map of its natural resources and placed it under a tax map overlay. At this scale, it is easy to see protected lands, natural resources, and the properties on which they exist. When displayed in a public setting, it is approached by residents who, by human nature, look up the parcel on which they live. It is at this time that the resident sees, probably for the first time, the natural resources associated with his or her piece of property. In addition, the resident sees the areas that have been put into conservation that may lie adjacent to his own property. While not addressing him or her directly, the map suggests that putting his own land into conservation will be a welcome gesture when the time comes to do so.

A mailing is then targeted to those people owning lands near conservation areas or consisting of natural resources. The mailing first goes to people owning more than fifty acres and living in Deering, then to people owning more than fifty acres but living outside of Deering. A similar series of mailings is

done for those owning more than twenty acres. The mailing consists of a packet with options for land inheritance, including reasons why land should be put into a conservation easement. An invitation to an event that will allow the recipients to ask questions regarding estate planning and conservation easements is a final component to the mailing. If there are not enough resources in the budget to spend on a mailing, then flyers hung at well-traveled street corners will let people know of the event.

At the event, the 1=1000' scale tax/GIS map is displayed for everyone to see. The map serves as a focal point for the meeting, with people again searching out their own properties and locating the natural resources and conservation areas associated with them. The map also gives people a personal investment in land protection. One person might suggest one way to go in order to link two conservation areas, while another person might suggest a different way to go. In either case, the residents themselves are formulating an opinion on how to best conserve lands that they feel are important, which is the ultimate goal.

Also at the event are representatives from local and national conservation groups that take conservation easements; for example, the Society for the Protection of New Hampshire Forests (also known as the Forest Society), the Piscataquog River Watershed Association, the Nature Conservancy, and so on. These professionals could answer any questions the residents might have about land protection: how to do it, the tax benefits, the implications of putting land under easement, and so on. The Conservation Commission's role in this process is to act as a liaison between the landowner and the conservation organization, since most well-established organizations have specific conservation goals.

Through this method of outreach, suggestion, and direction, the Deering Conservation Commission has been successful in conserving several large blocks of land. In November 1999, another parcel was placed under conservation by the Forest Society to connect two other conservation lands. The Deering Conservation Commission is now in the position of being the group that prospective easement donors approach first when they want to put land under the protection of a conservation easement. By approaching the residents of Deering in an organized, low-pressure manner, the Deering Conservation Commission has been able to secure large tracts of conservation land for future generations that most towns have yet to achieve.

Agricultural Conservation Easements

Area: West Deering and in existing agricultural areas

Conservation easements can be written to accommodate the special needs and interests of farms. In Deering, landowners of agricultural parcels in should be contacted to discuss the benefits easements. McAlister's Farm has an agricultural easement.

Management Agreement

Area: Town-wide

These management agreements focus on a particular open space value and a management agreement can be custom tailored to any specific situation.

Right-of-Way for Trails – The Town may protect open space along a recreational trail corridor area. The right-of-way could be arranged and exist as a legal agreement between the Town/nonprofit organization and the owner of the land where the trail is located.

Wildlife Corridors – Open space can be protected for its value in allowing wildlife to travel from one place to another safely. Working with maps indicating where certain species can be found, probable travel corridors could be recognized. Once areas are recognized, the Town could then create plans to acquire, protect, or manage these important corridors.

Buffers Between Uses – Buffers between incompatible land uses can ensure that development and growth within the Town does not have a negative impact on the rural and scenic qualities that the Town values.

Dollars and Sense of Open Space

Area: Town-wide

This is an educational workshop that can be held in Deering. New Hampshire studies, such as the *Dollars and Sense of Open Space* by the NH Wildlife Federation and *Does Open Space Pay* by the UNH Cooperative Extension show that open space brings in more revenue to a town than it requires in services. The general consensus is that less development, particularly residential development, means lower taxes. More houses require, among other community services, additional roads to maintain and the providing of more schooling for children. In Chester, it cost the community \$449,206 more to educate children from 117 new homes than those new residents paid in taxes. In Peterborough, the 188-home Pine Ridge Development cost the town \$128,124 more than it brought in taxes.

SUMMARY

The Town of Deering is graced with much natural beauty and a wide variety of valuable natural resources. The vast majority of the citizens of the Town wish to have the beauty, natural resources, and rural character of the Town preserved. Protection of the Town's natural resources and character requires the cooperative efforts of all of the Town Boards, officials, employees, and citizenry.

Unfortunately, as the pressures of development grow in the Town of Deering, so must our vigilance and regulation of development activities. The Town of Deering stands at the fork in the road, its chosen path will determine its future. Hopefully, we will take the path of orderly, reasonable, responsible growth with sustained efforts to preserve open space and the natural resources so valuable to the Town. This Master Plan is the start toward planning for the future. It provides a blueprint of how to attain the goals, which the citizens of the Town desire.

Each citizen of the Town has the ability to insure our communities objectives by serving on a municipal board, protecting open space, and attending public

hearings on new or proposed revisions to planning board regulations, zoning ordinances, or proposed developments. The support and participation of Towns people is vital to insure that the right path is chosen and our future secure.

– Respectfully Submitted, Edward Cobbett